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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/519,152	08/10/2005	Masatomo Shibata	23165	5477

23389 7590 03/24/2010

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EXAMINER	
TRAN, TRANG Q	
ART UNIT	PAPER NUMBER
2811	

MAIL DATE	DELIVERY MODE
03/24/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/519,152	SHIBATA ET AL.	
	Examiner	Art Unit	
	TRANG Q. TRAN	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 July 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) *12,14 and 16* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,13,15 and 17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12/27/04* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date ___.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4 are failing to particularly point out and distinctly define the metes and bounds of the subject matter because it is unclear what the preamble of the claims is.

Claims 5-11, 13, 15 and 17 are rejected because they depend on rejected claims 1-4.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-11, 13, 15 and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Ohmi et al. (US 6,597,039)

Re. claim 1, Fig. 8 of Ohmi discloses a porous substrate (3), comprising a plurality of porous layers (22/23) thereon, wherein the average opening diameter of pores in a porous layer (22) of said plurality of porous layers positioned in an outermost surface is smaller than the average diameter of pores in a porous layer (23) of said plurality of porous layers positioned on a substrate (2) side relative to said porous layer

positioned in said outermost surface (as seen in Fig. 8 and Col. 13, lines 52-65).

Re. claims 2-4, Fig. 8 of Ohmi discloses a porous substrate (2'+3'), comprising two porous layers (2'+3') thereon, wherein the average opening diameter of pores in a first porous layer (3') of said two porous layers (2'+3') positioned in an outermost surface is smaller than the average diameter of pores in a second porous layer (2') positioned on a substrate (1) side relative to said first porous layer (3'); "more than 50% of said pores in said first porous layer penetrate from the surface of said first porous layer to the interface between said first and second porous layer" (see Note 1 below);

Ohmi does not teach the volume porosity of said first and second porous layer is 10%-90%.

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to provide the volume porosity of said first and second porous layer is 10%-90% in Ohmi, in order to optimize the device performance.

It would have been obvious to choose certain measurement, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. See of the following: *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 830, 225 USPQ 232 (1984).

Re. claim 7, Ohmi discloses the porous substrate according to claim 3, wherein said second porous layer (23) comprises a semiconductor material (Col. 14, lines 20-25).

Re. claim 8, Ohmi discloses the porous substrate according to claim 3, wherein said second porous layer (23) comprises a group III nitride series compound semiconductor material (1-GaN).

Re. claims 10 and 11, Ohmi discloses the porous substrate according to claim 3, Ohmi does not teach wherein said average opening diameter of said porosity in said first porous layer is not more than 1 μm and the film thickness of said first porous layer is not more than 1 μm.

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to provide said average opening diameter of said porosity in said first porous layer and the film thickness of said first porous layer is not more than 1 μm in Ohmi, in order to optimize the device performance.

Furthermore, it has been held that where then general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller,* 105 USPQ 233.

Re. claim 13, Ohmi discloses a GaN series semiconductor layered substrate, comprising a GaN series semiconductor layer (1) grown on a porous substrate (3)

defined claim 1.

Re. claim 15, Ohmi discloses a GaN series semiconductor layered substrate, comprising a GaN series semiconductor layer (1) grown on a porous substrate (3) defined in claim 2.

Re. claim 17, Ohmi discloses a GaN series semiconductor layered substrate, comprising a GaN series semiconductor layer (1) grown on a porous substrate (3) defined in claim 4.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TRANG Q. TRAN whose telephone number is (571)270-3259. The examiner can normally be reached on Mon - Thu (9am-5pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne A. Gurley can be reached on 571-272-1670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/T. Q. T./

Examiner, Art Unit 2811

/Cuong Q Nguyen/

Primary Examiner, Art Unit 2811